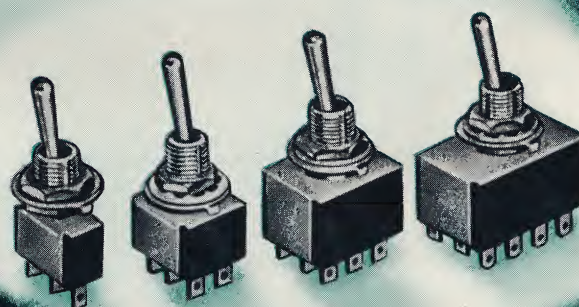


# DESIGN IDEAS for ENGINEERS

---



## ALCOSWITCH

LAWRENCE, MASSACHUSETTS



# DESIGN IDEAS for ENGINEERS

## ALCOSWITCH

With the coming of the space age, weight, size, precision, stability, and difficult operating conditions place a mighty "squeeze" on electronic design. Along with miniature circuit components, engineers have to fit switches into exceedingly small areas. Today, new materials, new manufacturing techniques, new components and new switches enter into the final engineering product requiring miniaturization.

As a result, modern **ALCOSWITCHES** have been created to reduce size and weight to a minimum and bear little physical resemblance to the older switches designed during the 1930's and 1940's. These **ALCOSWITCHES** are the new shape of miniature switching devices, not of the future, but what is currently available in quantity for laboratory testing and production use.

### SPDT AND DPDT SERIES

A new **ALCOSWITCH SERIES** of high quality ultra-miniature toggle switches is ideally suited for limited space requirements. Conservatively rated at 5 amperes @ 115 VAC.

### 3PDT AND 4PDT SERIES

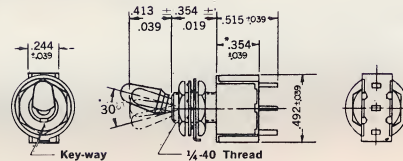
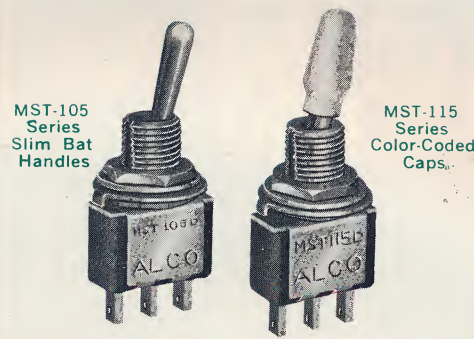
The feature of the one-piece body construction is to ultra-miniaturize the case size and still be consistent with good engineering specifications. In the switch mechanism, the toggle is linked directly to the movable contact member, providing positive make and break. The switch is designed to obtain positive detent action for improved "operator feel". Solid silver contacts and terminals are well-spaced for clearance, easy wiring, and good soldering ability.

### ON-ON-ON

This unique switching arrangement is completely enclosed in a compact black phenolic housing, and in certain applications takes the place of a 3-position rotary switch. Features a slim miniature bat handle, solid silver contacts and terminals.

**ENGINEERS:** If dimensions or specifications are critical, obtain drawings from **ALCOSWITCH**, Lawrence, Mass.

## SPDT



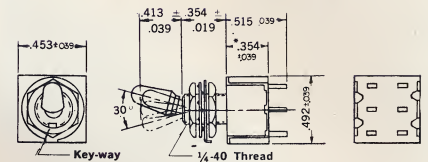
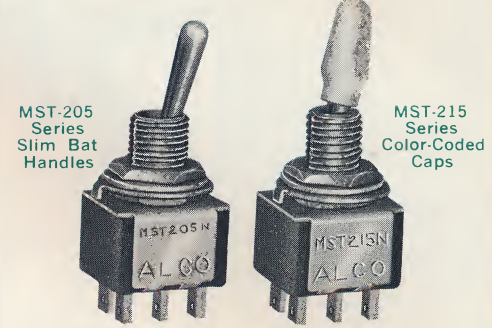
Ultra-miniaturized **ALCOSWITCH** has an exceptionally high current capacity in a tiny case. The  $\frac{1}{4}$ " thin toggle switch can be mounted in extremely close areas for aircraft and electrical equipment. Over 80,000 on-off operations. Solid silver contacts and terminals. Simple one-hole mounting.

### SPECIFICATIONS

**Insulating Resistance:**  
Over 1000 megohms @ 500 VDC.  
**Voltage Breakdown:**  
Over 1000 volts @ 60 cycles.  
**Life Cycle:**  
Well over 80,000 on-off actions.  
**Moisture Resistance:**  
Over 8 megohms after 48 hours at 40°C, and humidity of 95%.  
**Heat Resistance:**  
One Hour @ 140°C.  
**Case Material:**  
Black phenolic resin.  
**Contacts and Terminals:**  
\*Solid silver.  
**Bushing Size:**  
Standard  $\frac{1}{4}$ -40, usable up to  $\frac{1}{4}$ " panel thickness.

\*Center terminal brass with silver plate.

## DPDT



Combines high capacity, ultra-miniature size and long life with **ALCOSWITCH** precision. Rated at 5 amperes @ 115 VAC. Contacts and terminals are of solid silver.  $\frac{1}{2}$ " sq. case size makes it ideal for miniature equipment with critical applications and rear panel space limitations.

### SPECIFICATIONS

**Insulating Resistance:**  
Over 1000 megohms @ 500 VDC.  
**Voltage Breakdown:**  
Over 1000 volts @ 60 cycles.  
**Life Cycle:**  
Well over 80,000 on-off actions.  
**Moisture Resistance:**  
Over 8 megohms after 48 hours at 40°C, and humidity of 95%.  
**Heat Resistance:**  
One Hour @ 140°C.  
**Case Material:**  
Black phenolic resin.  
**Contacts and Terminals:**  
\*Solid silver.  
**Bushing Size:**  
Standard  $\frac{1}{4}$ -40, usable up to  $\frac{1}{4}$ " panel thickness.

\*Center terminal brass with silver plate.

### DECORATIVE MOUNTING NUTS

**STANDARD** double chamfered knurled nuts.  
**"PERFECT FIT"** round bevel top with lip for automatic stop.

| MODEL DESCRIPTION                        | 25-  | 100- | 500- |
|--|------|------|------|
| N-1 $\frac{1}{4}$ " Standard Knurl       | .028 | .025 | .022 |
| N-1A $\frac{1}{4}$ " "Perfect-Fit" Knurl | .04  | .036 | .033 |
| N-1B $15/32$ " "Perfect-Fit" Knurl       | .056 | .05  | .044 |

Packaged in multiples of 25

### INDUSTRIAL NET PRICE SCHEDULE

| MODEL DESCRIPTION      | One-24 | 25-99 | 100-499 | 500-999 |
|------------------------|--------|-------|---------|---------|
| MST-115D On-None-On    | 1.65   | 1.12  | .99     | .83     |
| MST-105D On-None-On    | 1.65   | 1.12  | .99     | .83     |
| MST-105E On-Off-On     | 1.95   | 1.33  | 1.17    | .975    |
| MST-105F On-None-(On)  | 1.95   | 1.33  | 1.17    | .975    |
| MST-105G (On)-Off-(On) | 1.95   | 1.33  | 1.17    | .975    |
| MST-105H On-Off-(On)   | 1.95   | 1.33  | 1.17    | .975    |

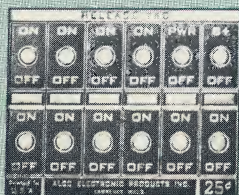
(On) (Off) Indicates Momentary Positions

### INDUSTRIAL NET PRICE SCHEDULE

| MODEL DESCRIPTION      | One-24 | 25-99 | 100-499 | 500-999 |
|------------------------|--------|-------|---------|---------|
| MST-215N On-None-On    | 2.15   | 1.43  | 1.29    | 1.08    |
| MST-205N On-None-On    | 2.15   | 1.43  | 1.29    | 1.08    |
| MST-205P On-Off-On     | 2.55   | 1.72  | 1.53    | 1.28    |
| MST-205R On-None-(On)  | 2.55   | 1.72  | 1.53    | 1.28    |
| MST-205S (On)-Off-(On) | 2.55   | 1.72  | 1.53    | 1.28    |
| MST-205T On-Off-(On)   | 2.55   | 1.72  | 1.53    | 1.28    |

(On) (Off) Indicates Momentary Positions

## ALUMINUM FOIL SWITCH PLATES

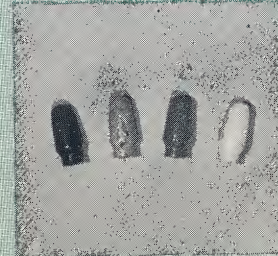


Pressure sensitive "on-off" plates for **ALCOSWITCHES** and other miniature switches having  $\frac{1}{4}$ " bushing; and for standard switches requiring  $\frac{1}{2}$ " hole.

| (Prices Per Card of 12 Plates) | One-49 | 50-99 | 100-Over |
|--------------------------------|--------|-------|----------|
| MODEL DESCRIPTION              |        |       |          |
| SP-1 Miniature type            | 25c    | 20c   | 18c      |
| SP-2 Standard type             | 25c    | 20c   | 18c      |

Copyright 1966, ALCO ELECTRONIC PRODUCTS INC., Printed in U.S.A.

## COLOR-CODED CAPS



The revolutionary feature of color-coded plastic caps for toggle switches has already proved to be an invaluable aid in aircraft installations and hazardous applications. The MST-115D, 215N, 315D, 415N switches are normally stocked ONLY WITH WHITE CAPS. Black, Blue, Red, Gray, White caps may be purchased separately for use on all our slim bat handle switches for color identification. When ordering — specify color.

Quotation on custom colors upon request

Packaged in 25 multiples

| MODEL DESCRIPTION   | One-24 | 25-99 | 100-499 | 500-999 |
|---------------------|--------|-------|---------|---------|
| C-10 For ALL Series | .04    | .028  | .025    | .022    |

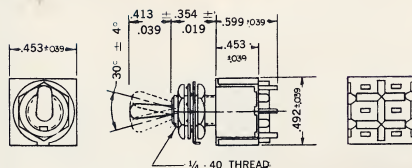


from

# ALCOSWITCH

## ON-ON-ON

MST-205PA  
Series  
Slim Bat  
Handles



### DP3T ON-ON-ON

New ON-ON-ON toggle switch made for applications where the Center-ON position is desired. The DPDT circuit is designed to have "ON" positions at opposite sides of the lever throw with the Center-ON operational when either circuit is used. 3 amperes @ 115 VAC. Ultra-miniature size is only 1/2".

#### SPECIFICATIONS

##### Initial Contact Resistance:

Below 20 milliohms at 2-4 VDC, 1 amp.

##### Insulating Resistance:

Over 1000 megohms between terminals and case ground @ 500 VDC.

##### Voltage Breakdown:

1000 VAC between terminals and case ground for a duration of one minute.

##### Life Cycle:

Well over 15,000 on-off switching actions at rated current.

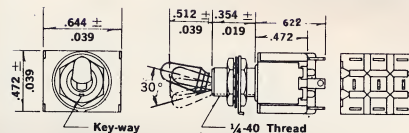
| WITH HANDLE TO THE KEY WAY | CENTER | WITH HANDLE OPPOSITE SIDE OF KEY WAY |  |
|----------------------------|--------|--------------------------------------|--|
| ON                         | ON     | ON                                   |  |
| 1-2                        | 2-3    | 2-3                                  |  |
| 4-5                        | 4-5    | 5-6                                  |  |

## 3PDT

MST-305  
Series  
Slim Bat  
Handles



MST-315  
Series  
Color-Coded  
Caps



#### SPECIFICATIONS

##### Initial Contact Resistance:

Below 20 milliohms at 2-4 VDC, 1 amp.

##### Insulating Resistance:

Over 1000 megohms between terminals and case ground @ 500 VDC.

##### Voltage Breakdown:

1000 VAC between terminals and case ground for a duration of one minute.

##### Life Cycle:

Well over 25,000 on-off switching actions at rated current.

##### Contacts and Terminals:

\*Solid silver.

##### Case Material:

Black phenolic resin.

##### Bushing Size:

Standard 1/4-40 • Nut, 1/8" across flats

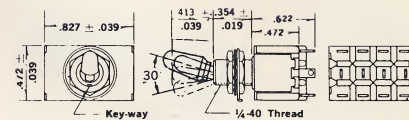
\*Center terminal brass with silver plate.

## 4PDT

MST-405  
Series  
Slim Bat  
Handles



MST-415  
Series  
Color-Coded  
Caps



#### SPECIFICATIONS

##### Initial Contact Resistance:

Below 20 milliohms at 2-4 VDC, 1 amp.

##### Insulating Resistance:

Over 1000 megohms between terminals and case ground @ 500 VDC.

##### Voltage Breakdown:

1000 VAC between terminals and case ground for a duration of one minute.

##### Life Cycle:

Well over 25,000 on-off switching actions at rated current.

##### Contacts and Terminals:

\*Solid silver.

##### Case Material:

Black phenolic resin.

##### Bushing Size:

Standard 1/4-40 • Nut, 1/8" across flats

\*Center terminal brass with silver plate.

#### INDUSTRIAL NET PRICE SCHEDULE

| MODEL DESCRIPTION    | One  | 25   | 100  | 500  |
|----------------------|------|------|------|------|
| MST205-PA On-On-On   | 2.85 | 1.90 | 1.71 | 1.42 |
| MST205-TA On-On-(On) | 3.15 | 2.14 | 1.89 | 1.58 |

(On) Indicates Momentary Positions

**ALCOSWITCH**

#### INDUSTRIAL NET PRICE SCHEDULE

| MODEL DESCRIPTION    | One  | 25   | 100  | 500   |
|----------------------|------|------|------|-------|
| MST-315D On-None-On  | 3.85 | 2.57 | 2.31 | 1.925 |
| MST-305D On-None-On  | 3.85 | 2.57 | 2.31 | 1.925 |
| MST-305E On-Off-On   | 4.15 | 2.82 | 2.49 | 2.075 |
| MST-305H On-Off-(On) | 4.15 | 2.82 | 2.49 | 2.075 |

(On) Indicates Momentary Positions

#### INDUSTRIAL NET PRICE SCHEDULE

| MODEL DESCRIPTION   | One  | 25   | 100  | 500  |
|---------------------|------|------|------|------|
| MST 415N On-None-On | 4.85 | 3.29 | 2.91 | 2.43 |
| MST 405N On-None-On | 4.85 | 3.29 | 2.91 | 2.43 |
| MST-405P On-Off-On  | 5.35 | 3.64 | 3.21 | 3.14 |

**ALCOSWITCH**

## WATER-PROOF BOOTS FOR MINIATURE ALCOSWITCHES



One-piece construction serves as a seal and locknut for miniature bat-handle. Black neoprene covers handle completely. Available only for 1/4-40 bushings.

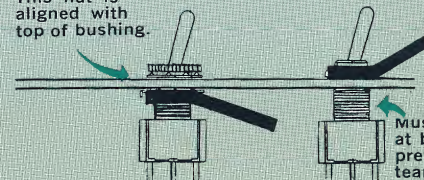
| MODEL  | One | 25  | 100 | 500 |
|--------|-----|-----|-----|-----|
| B-1440 | .60 | .40 | .36 | .30 |

## INSTALLATION WRENCH



A spanner wrench designed expressly to expedite the proper installation of ALCOSWITCHES. A long tapered arm extends at a slight angle allowing the user to tighten the lower mounting nut. MODEL NO. W-1.....Net 25¢ ea.

This nut is aligned with top of bushing.



PROPER USE

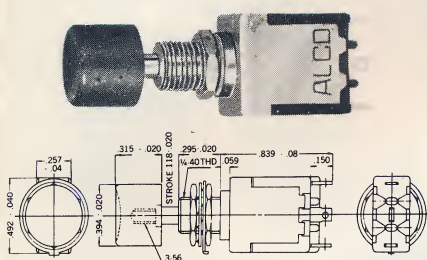
IMPROPER USE

Must have nut at bottom to prevent from tearing.



## PUSH BUTTON

### MOMENTARY



High current capacity in this new compact momentary push button switch designed for reliable control in aviation, military and industrial "miniature" requirements. Contact pressure is greatest at point of make and break. An audible click is produced by the snap-action mechanism. Available SPDT and DPDT, usable as either a Normally Open or Normally Closed switch.

| NORMAL CONTACT | PUSH FOR MOMENTARY CONTACT | DPDT |
|----------------|----------------------------|------|
| ON             | ON                         |      |
| (1) — (2)      | (2) — (3)                  | 1    |
| (4) — (5)      | (5) — (6)                  | 2    |

### SPECIFICATIONS

**Current Rating:**  
5 amperes, 115 volts

**Initial Contact Resistance:**  
Below 10 milliohms at 2-4 VDC 1 amp

**Insulating Resistance:**  
Over 100 megohms between terminals and case ground (when measured with a megger of 500VDC.)

**Voltage Breakdown:**  
1000VAC between terminals and case ground for a duration of one minute.

**Force Required to Activate:**  
Below 1.5 kilogram.

**Life Cycle:**  
Well over 20,000 on-off switching actions at rated current.

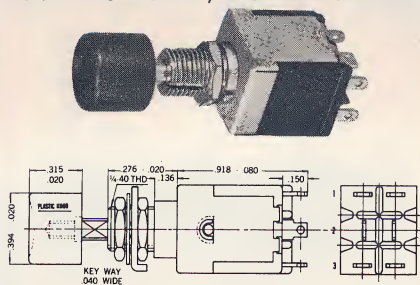
**Contacts and Terminals:**  
Solid Silver

**Case Material:**  
Black phenolic resin

**Bushing Size:**  
1/4" .40

## PUSH BUTTON

### PUSH TO MAKE, PUSH TO BREAK



### PUSH BUTTON SWITCH FOR REVERSING APPLICATIONS

World's first miniature push button switch controls 2 circuits — PUSH to make contacts and PUSH again to reverse action. Fast make and break snap-action to handle a high current of 5 amps @ 115 VAC. Solid silver contacts and terminals. Compact 1/2" size.

| PUSH FOR CONTACT | PUSH FOR CONTACT | DPDT |
|------------------|------------------|------|
| ON               | ON               |      |
| (1) — (2)        | (2) — (3)        | 1    |
| (4) — (5)        | (5) — (6)        | 2    |

### SPECIFICATIONS

**Current Rating:**  
5 amperes, 115 volts

**Initial Contact Resistance:**  
Below 10 milliohms at 2-4 VDC 1 amp

**Insulating Resistance:**  
Over 100 megohms between terminals and case ground (when measured with a megger of 500VDC.)

**Voltage Breakdown:**  
1000VAC between terminals and case ground for a duration of one minute.

**Force Required to Activate:**  
Below 1.5 kilogram.

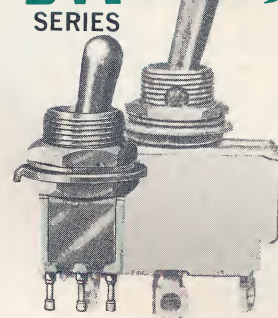
**Life Cycle:**  
Well over 20,000 on-off switching actions at rated current.

**Contacts and Terminals:**  
Solid Silver

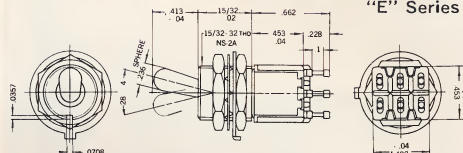
**Case Material:**  
Black phenolic resin

**Bushing Size:**  
1/4" .40

## Mustang SERIES



3 & 4 Pole case sizes same as "E" Series



The **MUSTANG** series is for designers who prefer the feel of a standard toggle switch but have space limitations behind the panel. The Mustang case size is the same as the ultra-miniature MSTE Series, however the mounting requirements are the same as the standard switches with 1/32" bushings. This new Alcoswitch concept is popular in the 3 Pole and 4 Pole series where other non-miniature switches tend to be bulky in size. (See size comparison in photo)

### SPECIFICATIONS

**Current Rating:**  
6 amperes @ 125 VAC (Resistance load)  
4 amperes @ 30 VDC (Resistance load)  
2 amperes @ 125 VAC (Inductive load)  
2 amperes @ 30 VDC (Inductive load)

**Initial Contact Resistance:**  
Below 10 milliohms at 2 - 4 VDC, 1 amp

**Insulating Resistance:**  
Over 10<sup>16</sup> ohms between terminals and case ground

**Voltage Breakdown:**  
1000 VAC between terminals and case ground for a duration of one minute.

**Operating Force:**  
0.2 to 1.5 Kg

**Life Cycle:**  
100,000 cycles (SPDT), 80,000 (DPDT), 20,000 (3PDT, 4PDT) of operating at a rate of 25 to 30 cycles per minute at the rated current. Temperature rise: below 56°C after rated switching operations under environmental temperature of below 40°C.

**Anti-Rotation Mount:**  
Keyway on bushing prevents rotation of toggle with panel. Mounts in 1/32" dia. hole.

### INDUSTRIAL NET PRICE SCHEDULE

| MODEL DESCRIPTION    | ONE-24 | 25-99 | 100-499 | 500-999 |
|----------------------|--------|-------|---------|---------|
| MSP-105F SPDT        | 1.95   | 1.33  | 1.17    | .975    |
| MSP-205R DPDT        | 2.85   | 1.90  | 1.71    | 1.42    |
| C-12 PLASTIC BUTTON* | .05    | .036  | .032    | .03     |
| C-14 CHROME BUTTON*  | .06    | .04   | .036    | .033    |

\*One red or black button supplied — state color. Chrome buttons available optionally.

### INDUSTRIAL NET PRICE SCHEDULE

| MODEL DESCRIPTION    | ONE-24 | 25-99 | 100-499 | 500-999 |
|----------------------|--------|-------|---------|---------|
| MSP-105D SPDT        | 1.95   | 1.33  | 1.17    | .975    |
| MSP-205N DPDT        | 2.85   | 1.90  | 1.71    | 1.42    |
| C-12 PLASTIC BUTTON* | .05    | .036  | .032    | .03     |
| C-14 CHROME BUTTON*  | .06    | .04   | .036    | .033    |

\*One red or black button supplied — state color. Chrome buttons available optionally.

### INDUSTRIAL NET PRICE SCHEDULE

| MODEL DESCRIPTION     | ONE-24 | 25-99 | 100-499 | 500-999 |
|-----------------------|--------|-------|---------|---------|
| MSTG-206N On-None-On  | 2.75   | 1.87  | 1.65    | 1.38    |
| MSTG-206P On-Off-On   | 3.35   | 2.28  | 2.01    | 1.68    |
| MSTG-206PA* On-On-On  | 3.65   | 2.48  | 2.19    | 1.83    |
| MSTG-306D† On-None-On | 4.45   | 3.03  | 2.67    | 2.23    |
| MSTG-306E† On-Off-On  | 4.95   | 3.37  | 2.97    | 2.48    |
| MSTG-406N° On-None-On | 5.55   | 3.77  | 3.33    | 2.78    |
| MSTG-406P° On-Off-On  | 6.15   | 4.18  | 3.69    | 3.08    |

\*DP3T †3PDT °4PDT

## AUXILIARY PUSH BUTTONS

The MSP-205 series push button ALCO-SWITCHES are normally supplied with black buttons and are also available in red or chrome when requested. Additional push buttons can also be obtained. When ordering state choice of color, special markings, i.e. letters, numerals, symbols which are available for quantity users above 5000 pieces.

## ALCOSWITCH IS FIRST WITH A FULL LINE OF MINIATURE ELECTRONIC SWITCHES

FIRST in ultra-miniature switches is the position of innovation and creative achievement which ALCOSWITCH has attained during the past ten years. Our broad experience and leadership is based upon the millions of ALCOSWITCHES being used today. Here, on these pages is ample evidence that ALCOSWITCH has specialized in miniature switches and originated many ingenious ideas to make engineering life more creative for the modern electronic industry.

Alcoswitch thinks MINIATURE... Alcoswitch thinks FIRST... CREATIVELY!

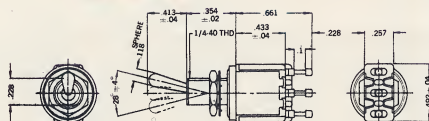


# ALCOSWITCH



## SPDT

MSTE-106  
Series  
Slim Bat  
Handles



A waterproof series with a conservative 6 Amps rating. This thin profile switch features new turret lugs to simplify wiring. The highest standard has been attained in the miniature switch field.

### "E" SERIES FEATURES FOR SPDT, DPDT, 3PDT AND 4PDT MODELS

Another "first" — the new "E" Series with the features most wanted in miniature switches. Repeatedly, ALCOSWITCH seeks out the new, the different and the dramatic engineering departures that build better switch products — in fact, our "firsts" have made the ALCOSWITCH the best engineered and most used in the industry. By every comparison ALCOSWITCH stands alone as Number One, and with the introduction of the "E" Series it unquestionably has no equal for precision-made switches in production quantities.

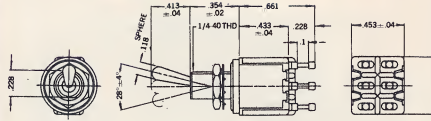
#### INDUSTRIAL NET PRICE SCHEDULE

| MODEL     | DESCRIPTION | One-24 | 25-99 | 100-499 | 500-999 |
|-----------|-------------|--------|-------|---------|---------|
| MSTE-106D | On-None-On  | 1.95   | 1.33  | 1.17    | .975    |
| MSTE-106E | On-Off-On   | 2.55   | 1.72  | 1.53    | 1.28    |

**ALCOSWITCH**

## DPDT

MSTE-206  
Series  
Slim Bat  
Handles



Compact, 1/2" square, low loss case with solid silver contacts makes this switch ideal for critical applications. It's the "perfect switch" with new features in the same price field that has made ALCOSWITCH the leader.

#### "E" Series Features Continued

**WATERPROOF** — Neoprene "O" rings located inside the toggle and on the shoulder. Terminals permanently sealed.

**NO TEAR-OFFS** — A mechanical shoulder on the bottom of the bushing prevents "tear-offs" where one-nut mounting is employed.

**VOLTAGE BARRIERS** — A new case design features high voltage barriers between terminals inside as well as outside.

**HIGH IMPACT CASE** — New plastic material capable of withstanding a higher impact; guards against accidental damage.

**LOW LOSS CASE** — Features extremely high resistance between terminals and case ground.

**HIGH TEMPERATURE CASE** — Ideally suited for printed circuit applications — prolongs soldering time.

#### INDUSTRIAL NET PRICE SCHEDULE

| MODEL       | DESCRIPTION | One-24 | 25-99 | 100-499 | 500-999 |
|-------------|-------------|--------|-------|---------|---------|
| MSTE-206N   | On-None-On  | 2.55   | 1.72  | 1.53    | 1.28    |
| MSTE-206P   | On-Off-On   | 3.15   | 2.14  | 1.89    | 1.58    |
| MSTE-206PA* | On-On-On    | 3.45   | 2.35  | 2.07    | 1.73    |

\*DP3T

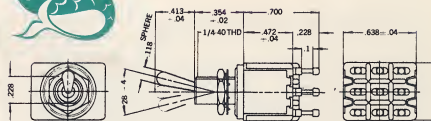
For operational details  
see inside center spread

## 3PDT AND 4PDT

MSTE-306  
Series  
Slim Bat  
Handles



MSTE-406  
Series  
Slim Bat  
Handles



Exclusive one-piece unitized case style, handles multiple circuits and is easily mounted in compact areas. No other 3 and 4 pole miniature switch can claim these most wanted features.

#### "E" Series Features Continued

**TURRET TYPE TERMINALS** — New shape is employed for simplified wiring or for printed circuit use.

**SOLID SILVER CONTACTS** — Solid silver wide surface contacts bonded (not riveted) on copper-silverplated terminals.

**6-AMP RATING** — Conservative 6 Amps @ 125 VAC. Exceptionally high current capacity in a compact case.

**LONG-LIFE CYCLE** — Over 100,000 on-off operations at rated operating conditions (SPDT).

**COLOR-IDENT CAPS** — Model C-10 caps optionally available to simplify color identification.

**STAINLESS OR GOLD** — Available on special orders, ALCOSWITCHES can be made with stainless steel construction or with goldplated contacts and terminals, or both. Quotation on request:

#### INDUSTRIAL NET PRICE SCHEDULE

| MODEL      | DESCRIPTION | One-24 | 25-99 | 100-499 | 500-999 |
|------------|-------------|--------|-------|---------|---------|
| MSTE-306D† | On-None-On  | 4.25   | 2.89  | 2.55    | 2.13    |
| MSTE-306E† | On-Off-On   | 4.75   | 3.23  | 2.85    | 2.38    |
| MSTE-406N* | On-None-On  | 5.35   | 3.64  | 3.21    | 2.68    |
| MSTE-406P* | On-Off-On   | 5.95   | 4.05  | 3.57    | 2.98    |

†3PDT \*4PDT

### "E" SERIES ENGINEERED FOR EXCELLENCE TO MAKE THEM THE "PERFECT SWITCH"

#### Current Rating:

- 6 amperes @ 125 VAC (Resistance load)
- 4 amperes @ 30 VDC (Resistance load)
- 2 amperes @ 125 VAC (Inductive load)
- 2 amperes @ 30 VDC (Inductive load)

#### Initial Contact Resistance:

Below 10 milliohms at 2 - 4 VDC, 1 amp

#### Insulating Resistance:

Over 10<sup>10</sup> ohms between terminals and case ground

#### Voltage Breakdown:

1000 VAC between terminals and case ground for a duration of one minute.

#### Operating Force:

0.2 to 1.5 Kg

#### Life Cycle:

100,000 cycles (SPDT), 80,000 (DPDT), 20,000 (3PDT, 4PDT) of operation at a rate of 25 to 30 cycles per minute at the rated current. Temperature rise: below 56°C after rated switching operations under environmental temperature of below 40°C.

#### Waterproof:

3.3 foot head of water for 30 minutes. Waterseal: "O" ring waterseal between handle and bushing, and between bushing flange and mounting panel.

#### Temperature:

-50°C to 150°C for one hour (non-operating).

#### Vibration:

10 cps to 55 cps. Shock: 50G's

#### Humidity:

Over 10 megohms after 96 hours at a relative humidity of 90 to 95% and temperature of 40°C.

#### Corrosion:

96 hour salt spray (density: 4%, temperature: 35°C ±1°C)

#### Anti-Rotation Mount:

Keyway on bushing prevents rotation of toggle with panel. Mounts in 1/4" dia. hole.



# ALCOSWITCH

Div. of ALCO ELECTRONIC PRODUCTS, INC. • LAWRENCE, MASSACHUSETTS 01843

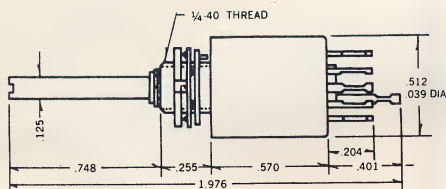
TELEPHONE Area 617 686-3888

CABLE ADDRESS: ALTRONICS

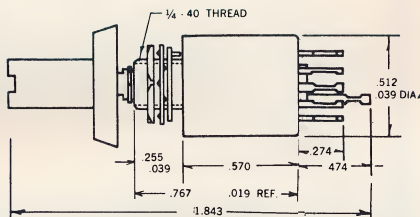
## ADJUSTABLE-STOP ROTARY



MRA-1-10S, LESS KNOB, 1/8" DIA. SHAFT

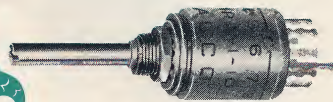


MRA-1-10, WITH KNOB, 5/32" DIA. SHAFT

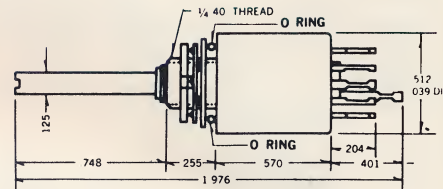


## WATERPROOF

Withstands  
9.8 feet of water  
submersion tests



MSRE-1-10, LESS KNOB, 1/8" DIA. SHAFT



### NON-ADJUSTABLE

Sealed with special silicon rubber 'O' Ring between shaft and bushing. Terminal portion is also sealed with a superior adhesive bonding cement before crimping. Fully withstands water submersion test of 9.8 feet.

#### Current Rating:

500 ma @ 125 VAC.

#### Initial Contact Resistance:

Below 20 milliohm at 2-4 VDC and at rated current.

#### Insulating Resistance:

Over 100 megohms between terminals and case ground

#### Voltage Breakdown:

1000 VAC between terminals and case ground for a duration of one minute.

#### Life Cycle:

Over 10,000 switching operations at the rate of 15 to 20 full rotations per minute at the rated current.

#### Waterproof:

3.3 foot head of water for 30 minutes. Watertight: "O" ring watertight between handle and bushing, and between bushing flange and mounting panel.

#### Contacts and Terminals:

##### Bushing Size:

Fits 1/4" dia. hole.

### SPECIFICATIONS

#### Current Rating:

500 ma @ 125 VAC.

#### Initial Contact Resistance:

Below 20 milliohm at 2-4 VDC and at rated current.

#### Insulating Resistance:

Over 100 megohms between terminals and case ground (when measured with a megger of 500 VDC at room temp.)

#### Voltage Breakdown:

1000 VAC between terminals and case ground for a duration of one minute.

#### Life Cycle:

Over 10,000 switching operations at the rate of 15 to 20 full rotations per minute at the rated current.

#### Contacts and Terminals:

Solid silver.

#### Bushing Size:

1/4 - 40.

#### Shaft:

See Below

#### Humidity: Models MRA-S Only (1/8" shaft)

Tested at a temperature of 40°C and relative humidity of 90-95% for 10 hours. Resistance between terminals and case ground will be more than 10 megohms.

#### Stop Guide Strain: Models MRA-S Only

The stop guide which limits rotation shall not be subjected to a force of not more than 2 Kg.-cm.

### INDUSTRIAL NET PRICE SCHEDULES

#### LESS KNOB — 1/8" DIA. SHAFT

| MODEL      | USABLE    | One-24 | 25-99 | 100-499 | 500-999 |
|------------|-----------|--------|-------|---------|---------|
| MRA-1-10S  | 2-10 pos. | 3.85   | 2.57  | 2.31    | 1.925   |
| MRA-2-5S   | 2-5 pos.  | 3.85   | 2.57  | 2.31    | 1.925   |
| MRA-3-3S   | 2-3 pos.  | 3.85   | 2.57  | 2.31    | 1.925   |
| *MSRA-4-2S | 2 pos.    | 3.85   | 2.57  | 2.31    | 1.925   |

\*Fixed

#### WITH KNOB — 5/32" DIA. SHAFT

| MODEL     | USABLE    | One-24 | 25-99 | 100-499 | 500-999 |
|-----------|-----------|--------|-------|---------|---------|
| MRA-1-10  | 2-10 pos. | 3.85   | 2.57  | 2.31    | 1.925   |
| MRA-2-5   | 2-5 pos.  | 3.85   | 2.57  | 2.31    | 1.925   |
| MRA-3-3   | 2-3 pos.  | 3.85   | 2.57  | 2.31    | 1.925   |
| *MSRA-4-2 | 2 pos.    | 3.85   | 2.57  | 2.31    | 1.925   |

\*Fixed

#### INDUSTRIAL NET PRICE SCHEDULE

| MODEL      | Pole | pos. | One-24 | 25-99 | 100-499 | 500-999 |
|------------|------|------|--------|-------|---------|---------|
| *MSRE-1-10 | 1    | 10   | 4.85   | 3.29  | 2.96    | 2.55    |
| *MSRE-2-5  | 2    | 5    | 4.85   | 3.29  | 2.96    | 2.55    |
| *MSRE-3-3  | 3    | 3    | 4.85   | 3.29  | 2.96    | 2.55    |
| *MSRE-4-2  | 4    | 2    | 4.85   | 3.29  | 2.96    | 2.55    |

\*Fixed

### ANODIZED ALUMINUM KNOBS FOR 1/8" DIA. SHAFTS

Machined aluminum knobs with anodized finish, modern styling and hairline indicator. Useable with switches and potentiometers having a 1/8" dia. shaft.



K-500A



KC-500-10

#### INDUSTRIAL NET PRICE SCHEDULE

| MODEL      | DESCRIPTION      | One-99 | 100-249 | 250-499 | 500-999 |
|------------|------------------|--------|---------|---------|---------|
| K-500A-1/8 | Natural Aluminum | .45    | .39     | .37     | .35     |
| K-500B-1/8 | Black Anodized   | .45    | .39     | .37     | .35     |
| K-500G-1/8 | Gold Anodized    | .45    | .39     | .37     | .35     |

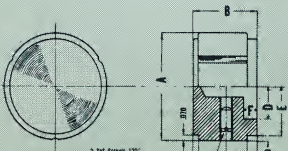
A new series of skirted knobs designed for MRA series Alcoswitches. Machined aluminum anodized with hairline indicator and 2 set screws. 1/8" shafts only.

#### INDUSTRIAL NET PRICE SCHEDULE

| MODEL     | DESCRIPTION             | One-99 | 100-249 | 250-499 | 500-999 |
|-----------|-------------------------|--------|---------|---------|---------|
| KC-500A   | Natural Aluminum        | .55    | .49     | .47     | .45     |
| KC-500B   | Black Anodized          | .55    | .49     | .47     | .45     |
| KC-500-10 | Black Anodized (0-to-9) | .65    | .59     | .56     | .53     |



| MODEL  | A    | B    | C    | D    | E    | F    |
|--------|------|------|------|------|------|------|
| KC-500 | .473 | .125 | .195 | .295 | .748 | .867 |



| MODEL     | A    | B    | C    | D    | E    | F    |
|-----------|------|------|------|------|------|------|
| K-500-1/8 | .500 | .625 | .490 | .358 | .433 | .354 |

THE ABOVE KNOBS ARE PART OF A COMPLETE LINE OF DECORATOR-STYLED ALUMINIZED ALCOKNOBS — WRITE FOR CATALOG